Tradable Emissions Permits

System of marketable permits, allocated among firms, specifying the maximum level of emissions that can be generated.

Under this system, **each firm must have permits to generate emissions.** Each permit specifies the number of emissions units that the firm is allowed to produce. Any firm that generates emissions not allowed by the permit is subject to substantial **monetary sanctions.** Permits are allocated among firms, with the total number of permits chosen to achieve the **desired maximum level of emissions.** Permits are marketable: they can be bought and sold.

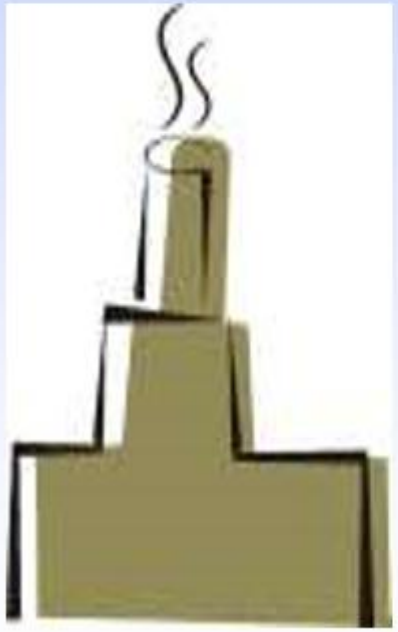
A competitive market for permits will develop if there are **enough firms and permits.** In market equilibrium, **the price of a permit equals the marginal cost of abatement for all firms**; otherwise, a firm will find it advantageous to buy more permits. The **level of emissions chosen by the government** will be achieved **at a minimum total abatement cost.** Those firms with the relatively low marginal cost of abatement curves will reduce emissions the most. Those with a relatively high marginal cost of abatement curves will buy more permits and reduce emissions the least.

What is emission trading?

What options are most cost-effective?

Company A can reduce 1000 tons CO_2E at $2/ton = $2000

Company B can reduce 1000 tons CO_2E at $6/ton = $6000



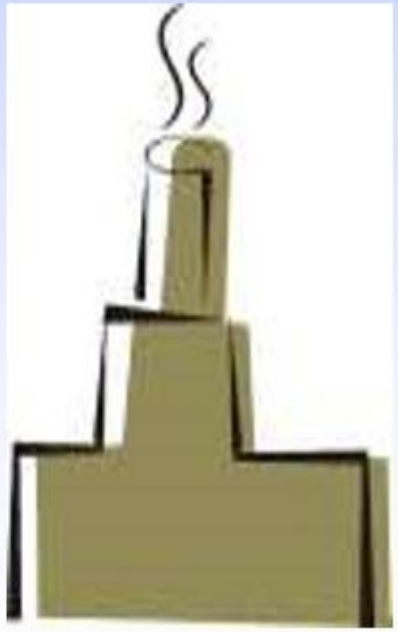
SELL

BUY

1000 tons CO_2E at $4/ton = $4000

$2000 Profit

$2000 Savings



Company A - Seller

Company B - Buyer

EU Emissions Trading Scheme

- Involves more than **15,000** operators at the European level, including aircraft operators, industrial thermoelectric plants, manufacturers, and production, storage, and transportation facilities of different types.

- **1,200** Italian plants are involved, 71% of which are in the manufacturing sector.

- Each plant must monitor its emissions annually and offset them with European Union Allowances (1 **European Union Allowance** is equivalent to 1 ton of CO_2 eq.) that can be bought and sold on the market.

- Allowances are accounted for in the **European Union Registry**, which keeps track of all changes in ownership of allowances.

- The total amount of allowances in circulation in the System is set at the European level according to the EU 2030 targets **(-55% compared to 1990**).

https://ec.europa.eu/clima/eu-action/eu-emissions-trading-system-eu-ets/free-allocation/allocation-industrial-installations_it

EU Emissions Trading Scheme

- In March 2021, the European Commission published the **regulation for the free allocation** of allowances to industrial installations in the ETS for the period 2021-2025.
- There are **54** emission benchmarks by product type based on the **10% most efficient plants**.
- The benchmarks have been **updated** to reflect technological progress and new environmental targets.
- Installations that do not reach the benchmarks will receive fewer allowances than they need. They will have to:
  - reduce their emissions,
  - buy additional allowances or credits to cover their emissions, or
  - combine these two options.

- Manufacturing plants exposed to the **risk of delocalization** receive a **share of free allowances**.
- The **manufacturing** industry received **80%** of its allowances **for free in 2013**. This proportion has decreased gradually year-on-year, down to **30% in 2020**.
- For less exposed sectors, free allowances are expected to be eliminated from 2026 by 2030.

EU Emissions Trading Scheme

Sectors and subsectors which, pursuant to Article 10b of Directive 2003/87/EC, are deemed to be at risk of carbon leakage

1. **Based on the criteria set out in Article 10b(1) of Directive 2003/87/EC**

NACE Code	Description
0510	Mining of hard coal
0610	Extraction of crude petroleum
0710	Mining of iron ores
0729	Mining of other non-ferrous metal ores
0891	Mining of chemical and fertiliser minerals
0899	Other mining and quarrying n.e.c.
1041	Manufacture of oils and fats
1062	Manufacture of starches and starch products
1081	Manufacture of sugar
1106	Manufacture of malt
1310	Preparation and spinning of textile fibres
1395	Manufacture of non-wovens and articles made from non-wovens, except apparel
1411	Manufacture of leather clothes
1621	Manufacture of veneer sheets and wood-based panels

https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019D0708&from=EN

Maritime transport sector

EU ETS Timeline

GLANDER INTERNATIONAL BUNKERING
Est. 1961

2024

January 1
EU ETS in Effect

Ships are required to pay for 40% of emissions from voyages within the EU/EEA.

2025

January 1
Expansion

Ships are required to pay for 70% of emissions from voyages within the EU/EEA and 50% of emissions from voyages between the EU/EEA and non-EU/EEA ports.

September 30
1st Deadline

Ships must surrender EUAs for 2024 voyages.

2026

January 1
Full Implementation

Ships are required to pay for 100% of emissions from voyages within the EU/EEA.

September 30
2nd Deadline

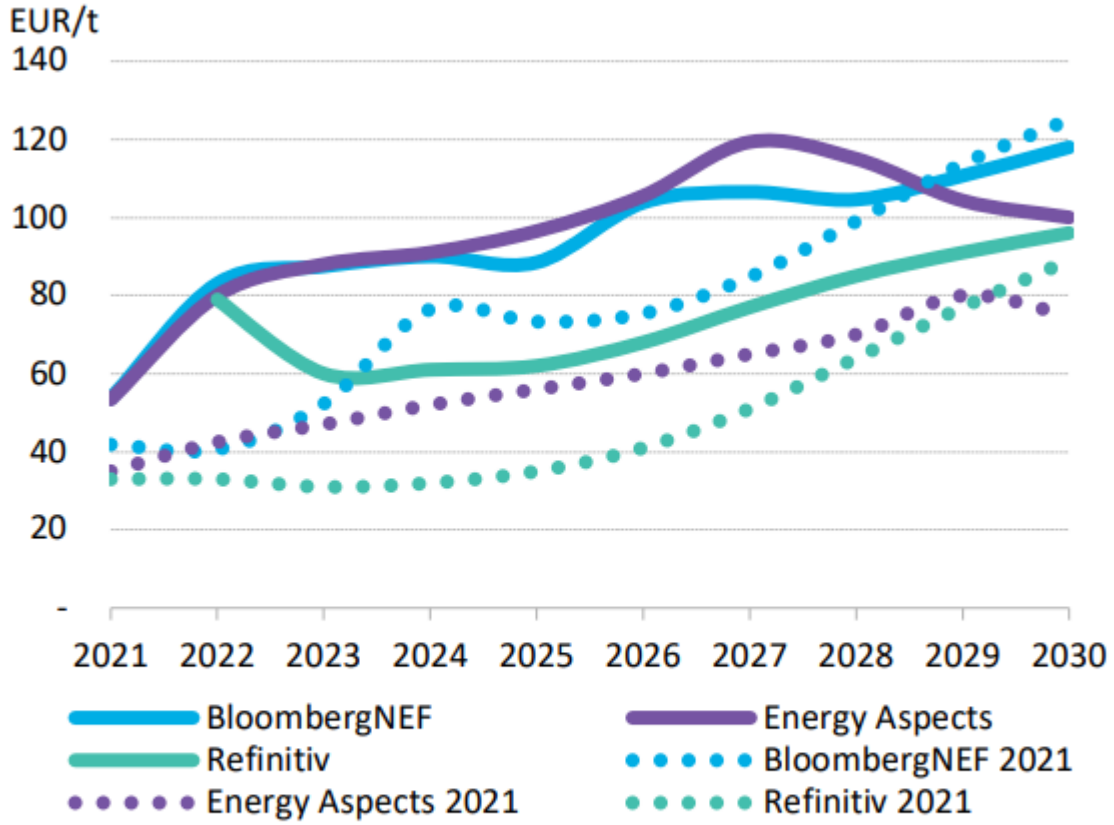
Ships must surrender EUAs for 2025 voyages.

EU Emissions Trading Scheme

- Market permits between companies from the same nation and from different nations within the EU
- Phase 1 (2005-7): grandfathering
- Phase 2 (2008-12): 5% reduction in permits allocated, expansion of emitters included (prices too low, €6 per ton in 2012)
- Phase 3 (2013-20): increase number of auctions
- Phase 4 (2021-30): Benchmark max emissions, update rate of benchmarks from 1.6% to 2.5%, starting in 2026.

https://tradingeconomics.com/commodity/carbon

EUA price forecasts



Source: BloombergNEF, Energy Aspects, Refinitiv. Note: Prices are in real 2021 € per metric ton.

Servizio | Energia

Cosa è l'European Union Emissions Trading System (Ets) e perché l'Italia chiede di sospenderlo

«Il cosiddetto Ets - ha spiegato Meloni al Senato - è un sistema che necessita di una revisione»

di Redazione Roma

12 marzo 2026

https://www.ilsole24ore.com/art/cosa-e-l-european-union-emissions-trading-system-ets-e-perche-l-italia-chiede-sospenderlo-AIQ8NutB

L'UE conferma il ruolo centrale dell'ETS nella transizione climatica. Pronte azioni "temporanee e su misura" per i costi dell'energia

Al vertice europeo, tutti d'accordo nel muoversi per tamponare l'impennata dei prezzi dell'energia innescata dalla crisi in Medio Oriente. Boccone amaro per l'Italia, l'ETS "funziona", rivendica von der Leyen. Che però apre al decreto bollette del governo per "affrontare nel breve termine le specificità italiane"

di Simone De La Feld @SimoneDeLaFeld1 — 20 Marzo 2026 in Energia

https://www.eunews.it/2026/03/20/lue-conferma-il-ruolo-centrale-dellets-nella-transizione-climatica-pronte-azioni-temporanee-e-su-misura-per-i-costi-dellenergia/

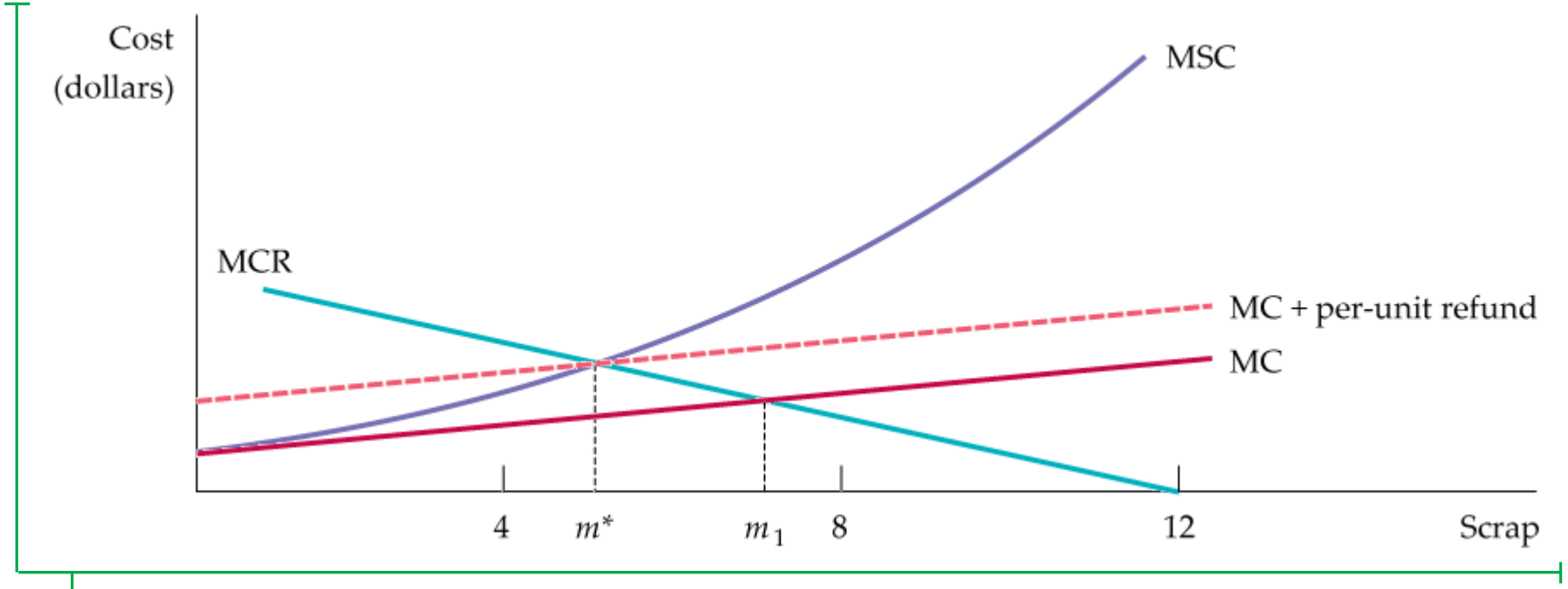
Recycling

To the extent that the disposal of waste products involves little or no private cost to either consumers or producers, society will dispose of **too much waste material**.

The overutilization of virgin materials and the underutilization of recycled materials will result in a market failure that may require government intervention. Fortunately, given the appropriate incentive to recycle products, this market failure can be corrected.

In many communities, **households are charged a fixed annual fee** for trash disposal. As a result, these households can dispose of glass and other garbage at a **very low cost**.

The low cost of disposal creates a divergence between the private and the social cost of disposal. The marginal private cost, which is the cost to the household of throwing out the glass, is likely to be constant (independent of the amount of disposal) for low to moderate disposal levels. It will then increase for large disposal levels involving additional shipping and dump charges. In contrast, the **social cost** of disposal includes the **harm to the environment** from littering, as well as the injuries caused by sharp glass objects. Marginal social cost is likely to increase, in part because the marginal private cost is increasing and in part because the environmental and aesthetic costs of littering are likely to increase sharply as the level of disposal increases.



THE EFFICIENT AMOUNT OF RECYCLING

The efficient amount of recycling of scrap material is the amount that equates the marginal social cost of scrap disposal, MSC, to the marginal cost of recycling, MCR.

The efficient amount of scrap for disposal **m*** is less than the amount that will arise in a private market, m_1.

The **refundable deposit** creates an additional private cost of disposal: the opportunity cost of failing to obtain a refund. With the higher cost of disposal, the individual will reduce disposal and increase recycling to the optimal social level m^*.

REFUNDABLE DEPOSITS

The supply of virgin glass containers is given by S_v and the supply of recycled glass by S_r.

The market supply S is the **horizontal sum** of these two curves. Initially, equilibrium in the market for glass containers involves a price P and a supply of recycled glass M_1.

By raising the relative cost of disposal and encouraging recycling, the refundable deposit increases the supply of recycled glass from S_r to S'_r and the aggregate supply of glass from S to S'.

The price of glass then falls to P', the quantity of recycled glass increases to M^*, and the amount of disposed glass decreases.